CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 86-95

WASTE DISCHARGE REQUIREMENTS FOR:

LAWRENCE LIVERMORE NATIONAL LABORATORY
LIVERMORE
ALAMEDA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board), finds that:

1. Lawrence Livermore National Laboratory (hereinafter called the discharger) applied for waste discharge requirements by an application dated September 4, 1986 to discharge waters on a short-term basis generated by well development and groundwater hydraulic testing activities. These activities are associated with investigations of toxic organic compounds which have contaminated groundwaters in the vicinity from a variety of past uses, storage, and disposal practices.

2. The discharger is performing these groundwater investigations to determine the extent of contamination and to develop remediation alternatives as required by Board Order No. 85-134 adopted on November 20, 1985.

3. Waters generated from well development, routine sampling, and hydraulic testing of monitoring wells are collected, treated, and discharged either on the ground in the immediate vicinity of the well, or into the sanitary sewer of the Livermore Water Reclamation Plant. Waters destined for land disposal consist primarily of pumped groundwaters produced during hydraulic testing of generally larger volume wells (usually greater than five gallons per minute estimated flow rate). These waters are generally treated in a portable air stripping unit prior to discharge. Waters to be sewered consist of other well development, routine sampling, and test waters and are collected in tanks for transport to and treatment at the discharger's on-site industrial cooling towers. These towers are connected to the local sanitary sewer. No direct discharge or overland flow to surface waters is allowed.

4. Expected pumped groundwater volumes from hydraulic testing of selected wells range from 1,000 to 40,000 gallons for the duration of each test, up to 48 hours.

5. A variety of volatile organic compounds have been detected in groundwater and saturated soils. The two predominant contaminants in ground water are perchloroethylene (PCE) which ranges in concentration from $<$ 0.5 ppb (parts per billion) to 1,200 ppb and trichloroethylene (TCE) which ranges from $<$ 0.5 to 5,300 ppb. Additionally, total fuel hydrocarbons in groundwater from leaks in underground gasoline tanks in one area were found at concentrations ranging from $<$ 0.5 ppb to 240 ppm (parts per million). The full extent and diversity of groundwater contaminants at the 640-acre site has not been determined yet.

6. Preliminary tests performed on the portable air stripping unit by the discharger indicate better than 98% removal of volatile organic contaminants in groundwater monitoring well samples. In most tests, contaminants detected in untreated samples were not detected in samples following normal treatment, based on a detection limit of 0.5 ppb. However, additional work is needed to develop the fuel hydrocarbon treatment process in order to meet the requirements for land discharge specified in this Order.

7. This Order regulates only short-term discharges of treated groundwater generated by well development and hydraulic testing of monitoring wells necessary for site investigation and development of remediation alternatives.

8. The site is located in the Mocho I Subbasin of the Livermore-Amador Valley groundwater basin and outside the main Central Basin groundwater unit.

9. The Regional Board adopted a revised Water Quality Control Plan for the San Francisco Bay Region (Basin Plan) on July 21, 1982. The Basin Plan contains water quality objectives for the Livermore-Amador Valley groundwaters and the Alameda Creek watershed above Niles.

10. The existing and potential uses of the Livermore-Amador Valley groundwaters and its subbasins are:

    - Municipal supply
    - Industrial supply
    - Industrial service supply
    - Agricultural supply

11. The existing and potential uses of the Alameda Creek watershed above Niles including Arroyo Seco, Arroyo Mocho, Arroyo Las Positas, Arroyo de la Laguna, and their tributaries are:

- Contact and non-contact recreation
- Wildlife habitat
- Groundwater recharge
- Fish migration and spawning

12. Effluent limitations of this Order are based on the Basin Plan, State plans and policies, and best engineering judgment.

13. The project constitutes a minor modification to land and such activity is thereby exempt from the provisions of the California Environmental Quality Act in accordance with Section 15304, Title 14, of the California Administrative Code.

14. The Board has notified the discharger and interested agencies and persons of its intent to issue waste discharge requirements for the discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

15. The Board, in a public meeting, heard and considered all comments pertaining to the discharger.

IT IS HEREBY ORDERED that the Lawrence Livermore National Laboratory, in order to meet the provisions containd in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

A. Prohibitions

1. The discharge or disposal of waste or hazardous material directly to surface waters or by overland flow to surface waters, paved surfaces, or surface drainages is prohibited.

2. Activities associated with the subsurface investigation which will cause significant adverse migration of pollutants are prohibited.

3. The discharge shall not create pollution or nuisance as defined in Section 13050(l) and (m), respectively, of the California Water Code.

B. Specifications

1. Well waters generated from well development, routine sampling, and hydraulic testing activities shall be treated in an air stripping unit before discharge onto the ground in order to meet levels of less than two times the action level for each compound specified by the California Department of Health Services for drinking water.

C. Provisions

1. The discharger shall comply with all sections of this Order immediately upon adoption.

2. Discharges of well waters containing fuel hydrocarbons generated by hydraulic testing in the Building 403 area may not begin until satisfactory treatment to meet specifications B.1. above has been demonstrated through the submittal of pertinent information and data and approved by the Executive Officer.

3. The discharger shall submit a list of wells to be hydraulically tested no later than five working days prior to the start of the testing for each group of wells to be tested. This list shall be supplemented with pertinent technical information including the esitmated flow rate and quantity to be pumped for each well, duration of pumping for each well, concentration of total volatile organic compounds in groundwater for each test well, depth of the perforated interval, the water bearing unit interval, the potential observation wells, a location map of the well, and the specific analytical test method for effluent testing.

4. A sample of treatment unit effluent shall be collected at the start of each test week and analyzed for total volatile organic compounds (EPA Test Method 601) and in the Building 403 area for total fuel hydrocarbons by GC/FID analysis. All test results (including any additional sampling performed by the discharger), the final quantity pumped for each well, and the duration of the test shall be contained and briefly discussed in the regular monthly reports submitted to the Board in accordance with Order No. 85-134 as may be revised.

5. Should effluent results show failure to meet Specifications B.1. above, the discharger shall cease testing, treatment, and discharge operations immediately until compliance with effluent level can be achieved. Incidents of non-compliance, corrective actions, and the dates when compliance is again achieved shall be discussed in the monthly report.

6. The discharge of properly treated well development and test waters into the sanitary sewer is not regulated by this Order.

7 The discharger shall permit the Regional Board or its authorized representative, in accordance with Section 13267(c) of the California Water Code.

   a. Entry upon premises where any pollution source exists, or may potentially exist, or in which any required records are kept;

   b. Access at reasonable times to copy any records required to be kept under terms and conditions of this Order;

   c. Inspection of any monitoring equipment or methods required by this Order.

   d. Sampling of any groundwater or soil which is accessible, or may become accessible as part of any investigation or remedial action program, to the discharger.

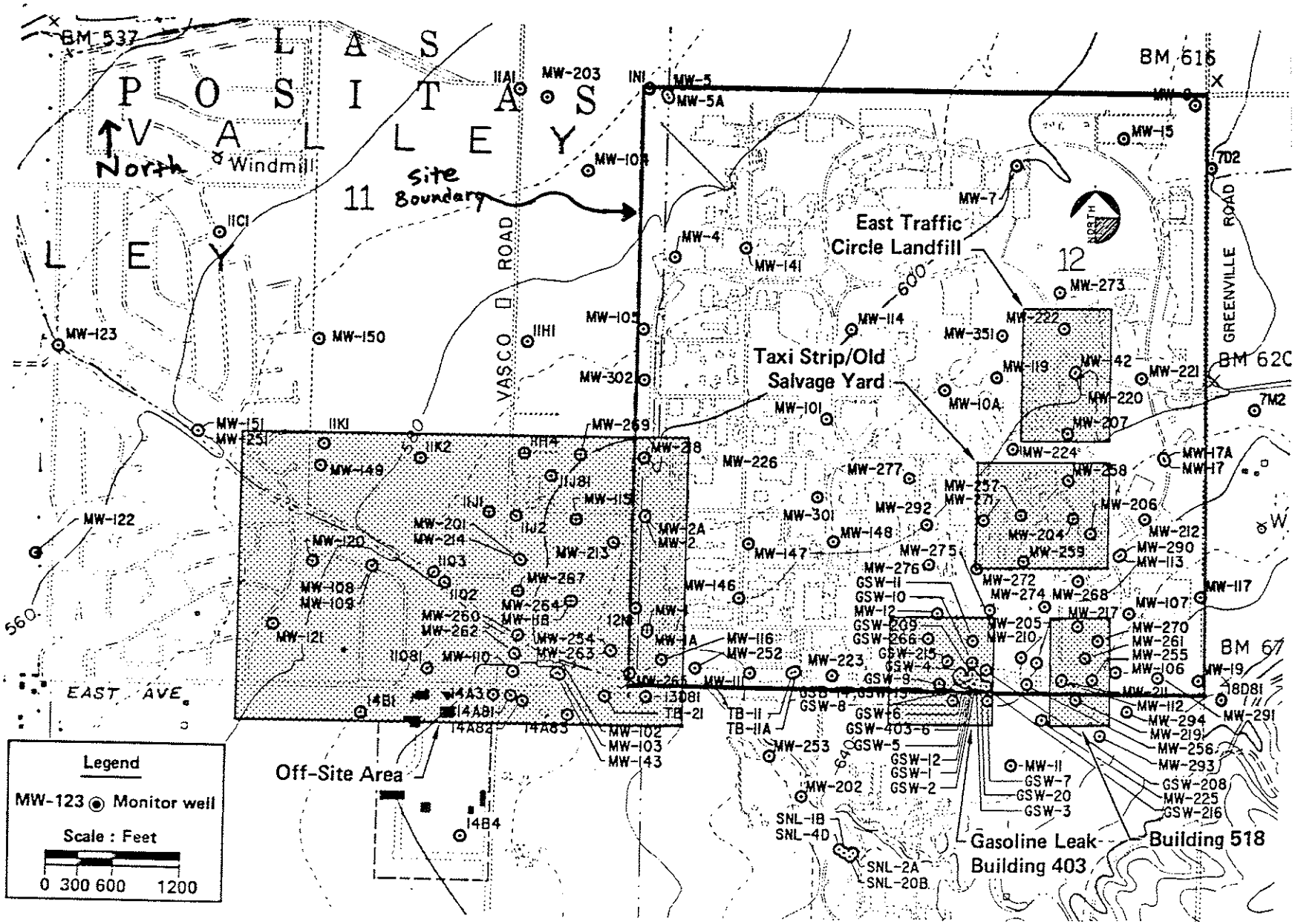
8. The discharger shall file a report on any material changes in the nature, quantity, or transport of polluted groundwater associated with the pollution described in this Order.

9. The discharger shall maintain in good working order and operate, as efficiently as possible any facility or control system installed to achieve compliance with the requirements of this Order.

10. The Board will review this Order periodically and may revise the requirements when necessary.

I, Roger B. James, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Qaulity Control Board, San Francisco Bay Region on December 17, 1986.

ROGER B. JAMES
Executive Officer



LOCATION MAP - Lawrence Livermore National Laboratory,
Livermore, Alameda County
(Location of Ground Water Monitoring Wells)